

# DRAFT

## SECTION E - INSPECTION AND ACCEPTANCE

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- E.1 CONTRACT CLAUSES INCORPORATED BY REFERENCE (FAR 52.252-2)(FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this address: <http://www.arnet.gov/far>

CLAUSE NUMBER	DATE	TITLE
52.246-2	AUG 1996	INSPECTION OF SUPPLIES-- FIXED PRICE
52.246-4	AUG 1996	INSPECTION OF SERVICES-- FIXED PRICE
52.246-16	APR 1984	RESPONSIBILITY FOR SUPPLIES

- E.2 STANDARD OF PERFORMANCE AND ACCEPTANCE OF SYSTEM

#### E.2.1 GENERAL

This clause establishes a standard of performance which must be met for both the Primary System and the Backup System, before any equipment or software delivered under this contract is accepted by the Government. This provision also includes replacement, substitute equipment, equipment upgrades, and equipment which is

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added or field-modified (modification of equipment from one model to another. These same provisions hold for the acceptance of any technology refresh during the base and option periods of the contract.

### E.2.2 Primary System Availability

Not later than 90 days after initial system delivery begins (defined as first hardware delivery of the Primary system to the facility) the contractor shall begin system acceptance. The system acceptance period shall not run longer than 60 days. During these 60 days the contractor must meet NOAA's operational use time<sup>1</sup>, reliability<sup>1</sup> and availability<sup>1</sup> requirements in a 30 consecutive day performance test. During the performance test the Primary system will run NCEP's current operational version of the benchmark codes using initial conditions transferred from the Operational run and must execute the runs in real-time and in parallel to, (i.e., executing within the same time window as) NOAA Operations. When not engaged in these parallel operational tests, the Primary system will re-run the benchmark codes using test data sets such that at least 90% of the Primary system is never idle. Only those delays caused by the offeror's system are scored against the contractor. Network (other than the OCCS interface), weather forecast model or data delivery problems, for example, are not under the contractor's control and do not count against the 99.0% requirement.

**Should the contractor fail to meet NOAA requirements the contract may be terminated for default.**

### E.2.3 Storage System Performance

The contractor shall demonstrate the reliability and performance of the mass storage systems by use of storage test programs. The storage test programs can be of the contractor's choosing, including purpose-written. All such programs will become the property of the government for use in regression and performance testing after acceptance and following changes to storage system sub-components and software.

These storage test programs shall exercise the entirety of the storage systems, to include the following features:

(1) for all disk storage:

- \$ Demonstrate and record maximum bandwidth, maximum sustainable transfer rate, and maximum throughput for each category, where the categories are: Directly attached to the OCCS; Shared among several computers over the local network; and disk storage used as cache for archiving.
- \$ Transfer data to exercise nearly every drive (describe exemptions such as security for the OS)
- \$ Provide for continuous running of multiple copies of the storage test programs in

the background around the clock to reveal any reliability problems or contention delays. These tests may be suspended during the timing runs of the benchmark programs.

(2) for shared disk:

\$ Maximum and practical transfer rates between shared storage and the OCCS computer(s), and the storage.

(3) for archive storage:

\$ transfer rates across a pool of media such that there is occupancy on the drives of at least 80% and active I/O on all of those drives during the timing phase of the runs (e.g., copying data from tape to tape). This shall be repeated for each drive type.

#### E.2.4 Computational Primary System Performance

The offeror shall, not later than 90 days after installation, complete the following performance tests:

- \* Benchmark re-run (See Section J3), to validate performance metric
- \* Disk performance
  - verify I/O bandwidth
  - verify filesystem performance

#### E.2.5 Reproducibility/Accuracy

Upon successful completion of each model run during the acceptance test period, that model run's output will be compared with the Operational run. The contractor must show that all runs must demonstrate numerical accuracy by agreement with the corresponding Operational run out to 5 decimal places. Any run not demonstrating numerical reproducibility will be considered a system failure, thus affecting reliability, until or unless it can be demonstrated otherwise. During the acceptance period, the contractor is expected to perform a series of runs of the benchmark codes from static data. The Contractor must use the results of these runs to demonstrate reliable consistent bit-for-bit numerical reproducibility. These static runs should be performed for no less than once per day for each benchmark code.

#### E.2.6 Acceptance Test Spreadsheet

The COTR or an appropriate designee will construct and maintain during the acceptance tests (described in Sections E.2.1, E.2.2, E.2.3, E.2.4) a spreadsheet which maintains all metrics designated by the acceptance test criteria and record all events, and the diagnosed causes, contributing to these metrics. The COTR, selected NOAA staff involved in the acceptance testing, and Contractor representatives will meet routinely during the acceptance test period to agree on event categorizations and descriptions, and validate the acceptance test criteria metrics.

### E.2.7 Backup System

The Backup System is expected to be a “clone” of the Production System. The Backup System is expected to satisfy the acceptance criteria as described below.

#### E.2.7.1 Backup System Availability

Not later than 90 days after initial system delivery begins (defined as first hardware delivery of the Backup system to the facility) the contractor shall begin system acceptance. The system acceptance period shall not run longer than 60 days. During these 60 days the contractor must meet NOAA’s operational use time<sup>1</sup>, reliability<sup>1</sup> and availability<sup>1</sup> requirements in a 30 consecutive day performance test. During the performance test the Backup system will run NCEP’s current operational version of the benchmark codes using initial conditions transferred from the Operational run and must execute the runs in real-time and in parallel to, (i.e., executing within the same time window as) NOAA Operations. When not engaged in these parallel operational tests, the Backup system will re-run the benchmark codes using test data sets such that at least 66% of the Backup system is never idle. Only those delays caused by the offeror’s system are scored against the contractor. Network (other than the OCCS interface), weather forecast model or data delivery problems, for example, are not under the contractor’s control and do not count against the 99.0% requirement.

**Should the contractor fail to meet NOAA requirements the contract may be terminated for default.**

#### E.2.7.2 Backup Storage System Performance

The contractor shall demonstrate the reliability and performance of the mass storage systems by use of storage test programs. The storage test programs can be of the contractor’s choosing, including purpose-written. All such programs will become the property of the government for use in regression and performance testing after acceptance and following changes to storage system sub-components and software.

These storage test programs shall exercise the entirety of the storage systems, to include the following features:

(1) for all disk storage:

- \$ Demonstrate and record maximum bandwidth, maximum sustainable transfer rate, and maximum throughput for each category, where the categories are: Directly attached to the OCCS; Shared among several computers over the local network; and disk storage used as cache for archiving.
- \$ Transfer data to exercise nearly every drive (describe exemptions such as

- security for the OS)
- \$ Provide for continuous running of multiple copies of the storage test programs in the background around the clock to reveal any reliability problems or contention delays. These tests may be suspended during the timing runs of the benchmark programs.
- (2) for shared disk:
- \$ Maximum and practical transfer rates between shared storage and the OCCS computer(s), and the storage.
- (3) for archive storage:
- \$ transfer rates across a pool of media such that there is occupancy on the drives of at least 80% and active I/O on all of those drives during the timing phase of the runs (e.g., copying data from tape to tape). This shall be repeated for each drive type.

#### E.2.7.3 Backup Computational System Performance

The offeror shall, not later than 90 days after installation, complete the following performance tests:

- \* Benchmark re-run (See Section J3), to validate performance metric
- \* Disk performance
  - verify I/O bandwidth
  - verify file system performance

#### E.2.7.4 Backup System Reproducibility/Accuracy

Upon successful completion of each model run during the acceptance test period, that model run's output will be compared with the Operational run. The contractor must demonstrate that all runs must demonstrate numerical accuracy by agreement with the corresponding Operational run out to 5 decimal places. Any run not demonstrating numerical reproducibility will be considered a system failure, thus affecting reliability, until or unless it can be demonstrated otherwise. During the acceptance period, the contractor is expected to perform a series of runs of the benchmark codes from static data. The Contractor must use the results of these runs to demonstrate reliable consistent bit-for-bit numerical reproducibility. These static runs should be performed for no less than once per day for each benchmark code.

#### E.2.7.5 Acceptance Test Spreadsheet

The COTR or an appropriate designee will construct and maintain during the acceptance tests (described in Sections E.2.7.1, E.2.7.2, E.2.7.3, E.2.7.4) a spreadsheet which maintains all metrics designated by the acceptance test criteria and record all events, and the diagnosed causes, contributing to these metrics. The COTR, selected NOAA staff involved in the acceptance testing, and Contractor representatives

will meet routinely during the acceptance test period to agree on event categorizations and descriptions, and validate the acceptance test criteria metrics.

**Should the contractor fail to meet NOAA requirements, described in Section E.2.7, the contract may be terminated for default.**

### E.3 ACCEPTANCE DOCUMENTATION and DATE OF ACCEPTANCE

*At the successful conclusion of the Acceptance Test the following documents will be produced;*

#### **Letter of Acceptance**

The Letter of Acceptance for both the Production and Backup systems is authored by the Contractor, and signed by both the Contractor and the Contracting Officer, upon successful completion of the E.2.3 acceptance test period and retroactively establishing the first day of the successful 30-day performance period.

#### **Acceptance Test Report**

Co-authored by the Contractor and the COTR and completed within three working days of execution of the Letter of Acceptance, the acceptance test report documents the events of the evaluation period and provides both a subjective assessment of the OCCS and an objective tabulation of acceptance test period events and results. Objective information to be included in the report are: the final values for all acceptance criteria metrics, a copy of the acceptance test spreadsheet, and a description of all events (including null time periods), as well as causes for and remedies of those events.

Charges shall commence on the first day of the successful performance period. The Government shall not accept equipment and shall not pay charges until the standard of performance is met.

#### **E.3.1 Optional Period of Performance Acceptance**

One four-year optional period of performance is included in the contract. Acceptance of upgrades associated with the option will correspond with requirements in E.1 and E.2. System performance metrics will be determined based on the benchmark suite defined in Section J3, which will be comprised of the Operational codes at the time of the technology refresh. Other changes to Acceptance requirements must be mutually agreeable between the Government and the contractor otherwise the requirements contained in this section shall apply.

#### E.4 DELAY OF START OF PERFORMANCE PERIOD

If necessary, the Government may delay the start of the performance period, but such a delay shall not exceed 30 consecutive days. Should the Government delay the start of the performance period, rental or maintenance charges shall accrue for that period of time between the installation date and the start of the performance period and shall be paid upon completion of the successful performance period.

<sup>1</sup> See Glossary, Section C